



CLIMATE AND CLEAN AIR COALITION
TO REDUCE SHORT-LIVED CLIMATE POLLUTANTS

Household Air Pollution – Effects on Health and Climate

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Around 3 billion people cook and heat their homes using open fires and leaky stoves burning biomass (wood, animal dung and crop waste) and coal.



Photo: Dominique Nahr, Magnum
For UNEP – We have the Power

Over half of these people live in India, China and Indonesia.
The proportion of the population relying on biomass is highest in Sub-Saharan Africa, with often more than 90% of the rural population.

Collecting firewood to fuel inefficient cookstoves is one of the causes of deforestation, land degradation and ecosystem damage.



Photo: Dominique Nahr, Magnum
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Most firewood is gathered from trees outside forests; charcoal is produced from forest resources. Inefficient production of charcoal is a strain on biomass resources, particularly around urban centres (over 50%, ~ 1.8 b m³, of annual worldwide logging volumes of raw wood is used for fuel).
Dung and residues used for fuel rather than left in the fields or ploughed back into fields, soil fertility is reduced and risk of soil erosion is increased.

Inefficient cookstoves are estimated to be responsible for about 25 per cent of emissions of black carbon, a short-lived climate pollutant.



Photo: Dominique Nahr, Magnum
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Fuelwood, roots, agricultural residues and animal dung all produce high emissions of carbon monoxide, hydrocarbons and particulate matter. Black carbon emissions are the second most important contributor to global climate change, behind carbon dioxide.

EMISSIONS

Main BC-rich sources
by region and sector
(2005)



PRIMARY BLACK CARBON-RICH SOURCES

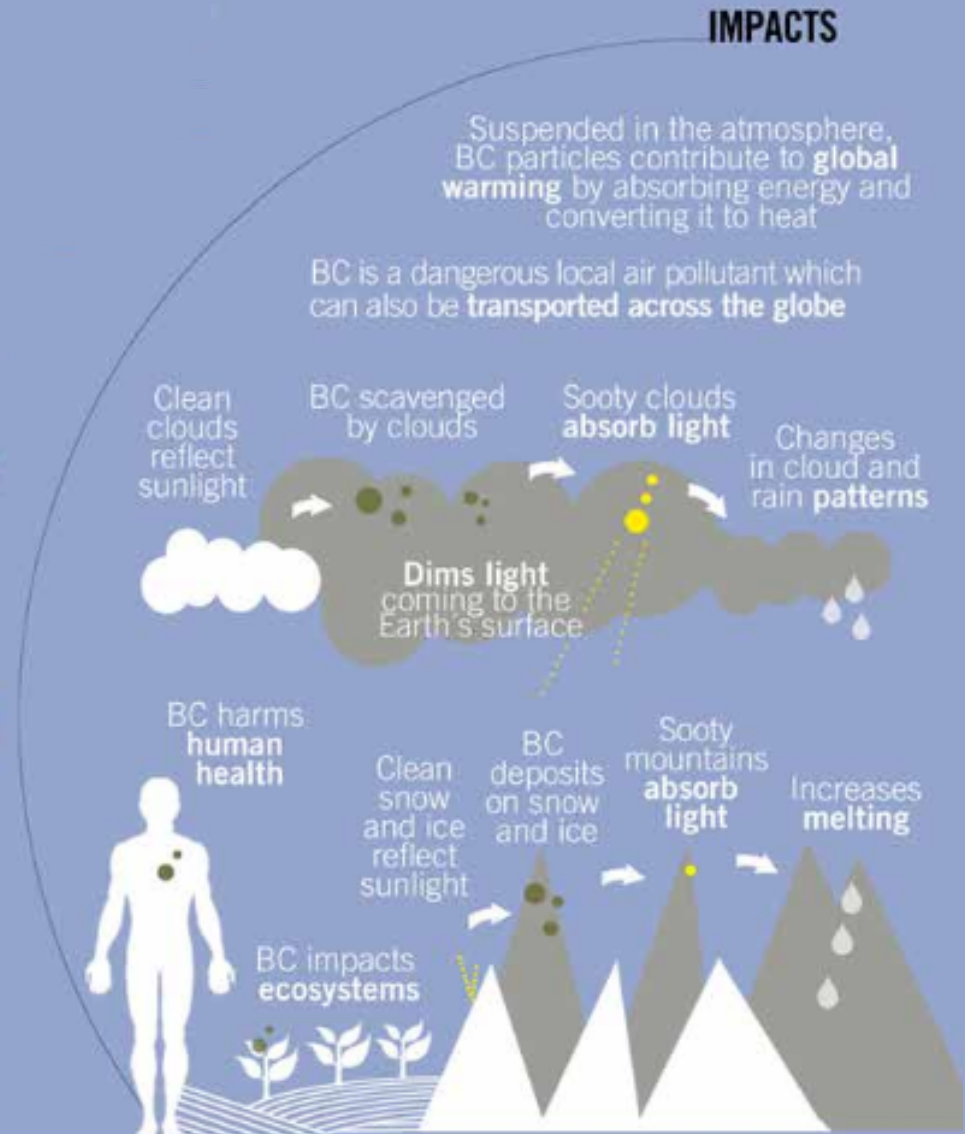
BC is always emitted with co-pollutant particles, some of which have a cooling effect on climate. The ratio of BC to co-pollutants varies by source and determines if a measure has a **net warming** or **net cooling** effect.



Black carbon has a strong warming effect.

It directly disrupts meteorological processes that millions of people depend on for their available drinking water and crop irrigation.

When it lands on snow, ice caps and glaciers, it absorbs the sun's heat, reduces reflectivity and causes widespread and faster melting.



SLCPs and Sea-Level Rise

SLCP control measures could help reduce the rate of sea-level rise, one of the most concerning effects of climate change.

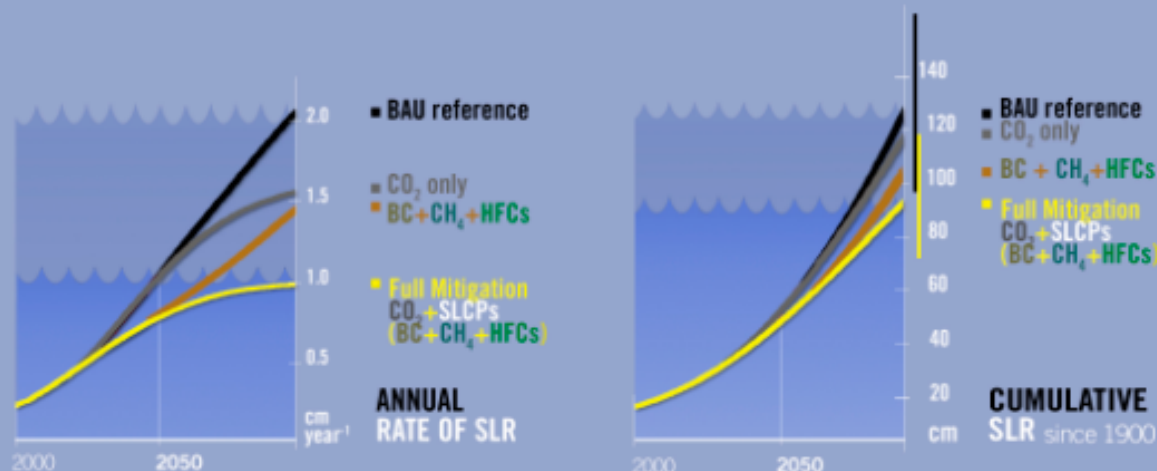
TOP 10 CITIES AT RISK OF COASTAL FLOODING DAMAGE BY POPULATION

Vulnerability based upon projected
1 meter sea-level rise in 2070

Sea-level rise in **the Indian and Western Pacific Oceans** is expected to be **10-20% higher** than the global average



SEA-LEVEL RISE (SLR) PROJECTION by 2100



Replacing primitive cooking stoves with modern versions that emit far less particulate matter (24% to 70%) is a cost effective solution.



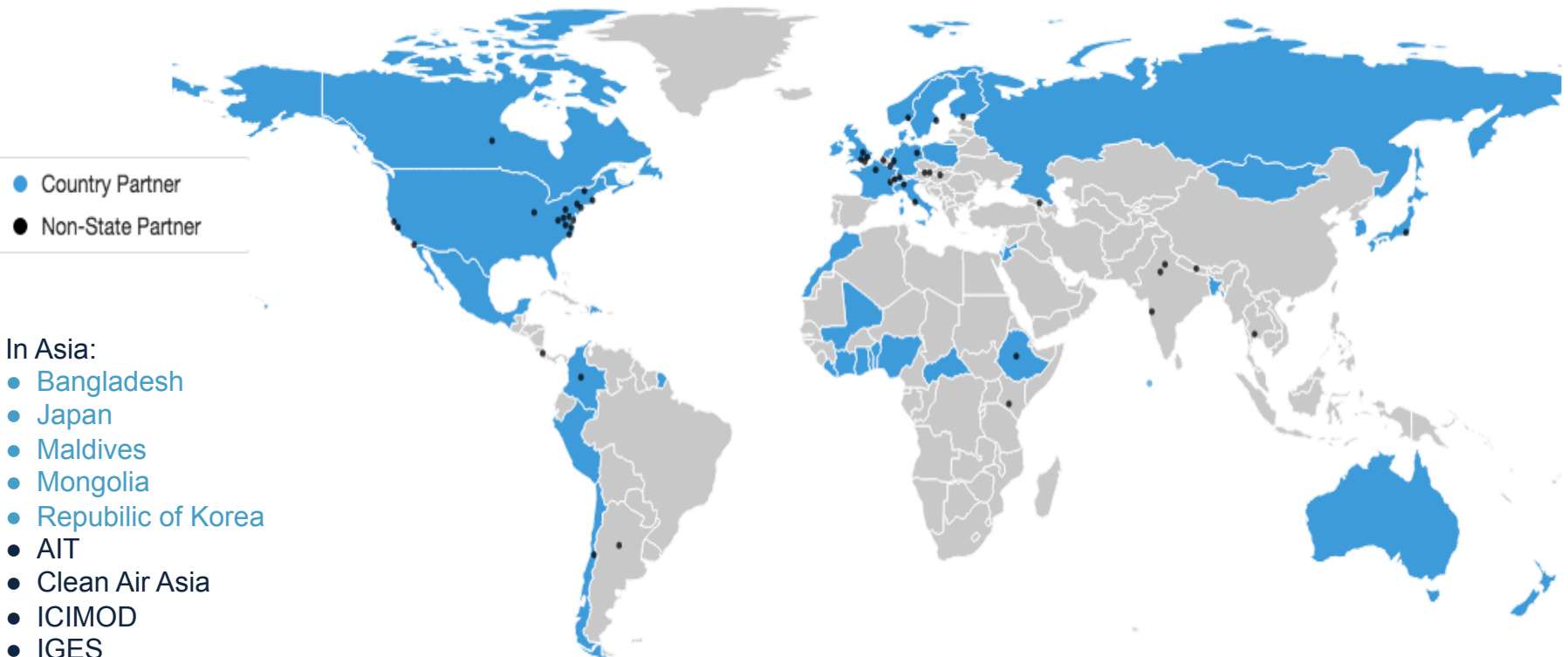
Photo: Dominique Nahr, Magnum
For UNEP – We have the Power

Because black carbon remains in the atmosphere for only a few days, reducing black carbon emissions is an effective near-term strategy for slowing global warming and avoiding some of the most imminent climate change tipping points, alongside energy efficiency, health and food security benefits.

A global partnership
to reduce short-lived climate pollutants,
with benefits for air quality and health,
food security, energy efficiency and the climate.

February 2012
7 partners

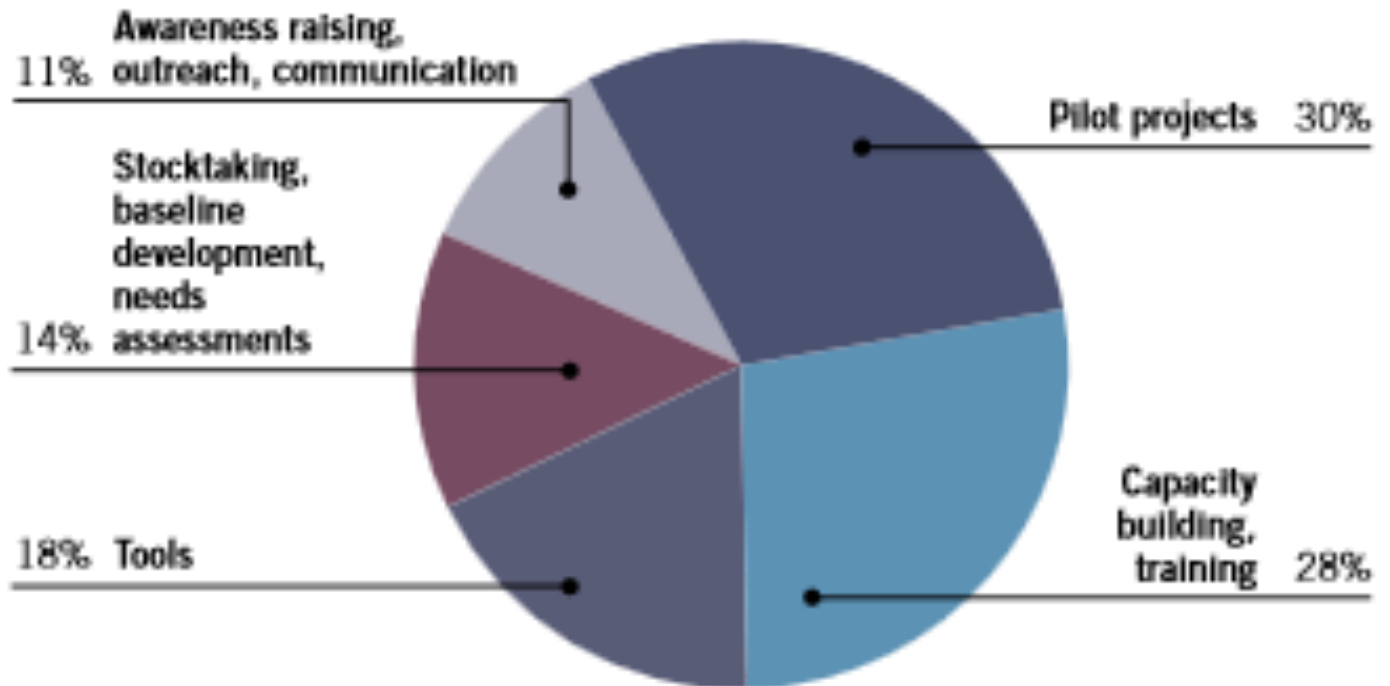
November 2014
96 partners (42 governments, 12 IGOs, 42 NGOs)



The Coalition of the working!

Voluntary, individual and collective action

CCAC BUDGET ALLOCATION BY TYPE OF ACTIVITY



The Coalition of solutions:
16 readily available and cost effective measures
Implementation through 11 initiatives



Diesel



Oil & Gas



Waste



Bricks



HFCs



Cookstoves



Agriculture



SNAP



Assessments



Finance

... and a new Urban Health Initiative



Cookstoves

Clean Cooking and Domestic Heating

Objective: reduce emissions of BC and other SLCPs from use of solid fuels in inefficient cook and heatstoves, and provide cost-effective health, environment, gender, and livelihood benefits.

- Advocacy and awareness raising
- Spark Fund special tranche
- Standards and testing protocols to provide clear criteria for evaluating emission reductions of BC and other SLCPs

Overview

- Many fuels are used to generate light, including **kerosene**. Quantifying the health impacts is of critical importance because of the magnitude of people they potentially impact.

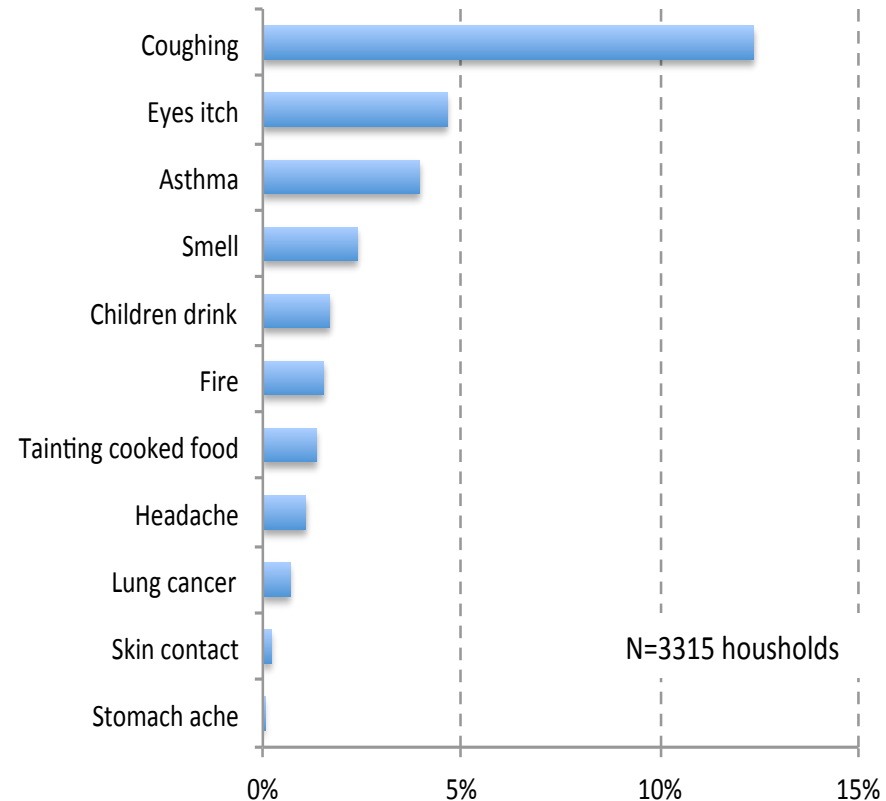
Health and Safety Issues :

- Burns**;
- Health risks from **indoor pollution**;
- Poisoning** from non-intentional ingestion of kerosene fuel by children;
- Compromised visibility** and visual health;
- A variety of **maternal health** issues; and,
- Adverse outcomes in **health-services** facilities illuminated solely or sporadically with fuel-based light.

These adverse health and safety conditions disproportionately impact **women and children**.

Health and safety risks perceived by fuel-based lighting users

(Ethiopia, Ghana, Kenya, Tanzania, Zambia)

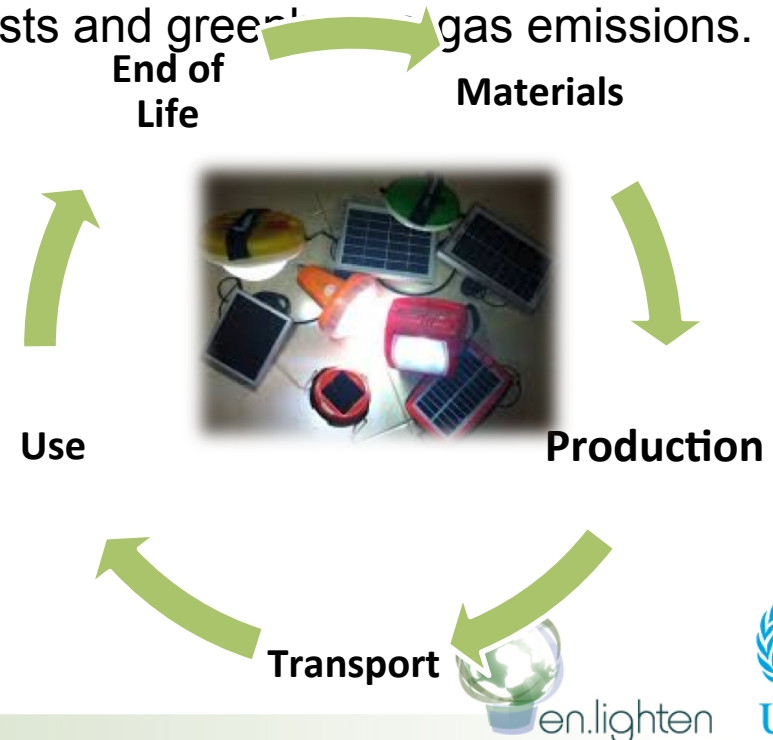


RISKS and Alternatives. Key Findings

- Substantial and diverse health and safety risks are posed by fuel-based lighting that can be **eliminated with a switch to small-scale solar or grid-charged LED lighting systems.**
- The potential for producing and deploying “safer” fuel-based lighting is highly limited.
- Energy Efficient, off-grid lighting solutions offer the most promising and scalable means to eliminate the vast majority of adverse health outcomes associated with fuel-based lighting, while lowering the costs and greenhouse gas emissions.

A lifecycle perspective

considering the environmental and health implications of the energy embodied in creating electric lighting systems must be considered.

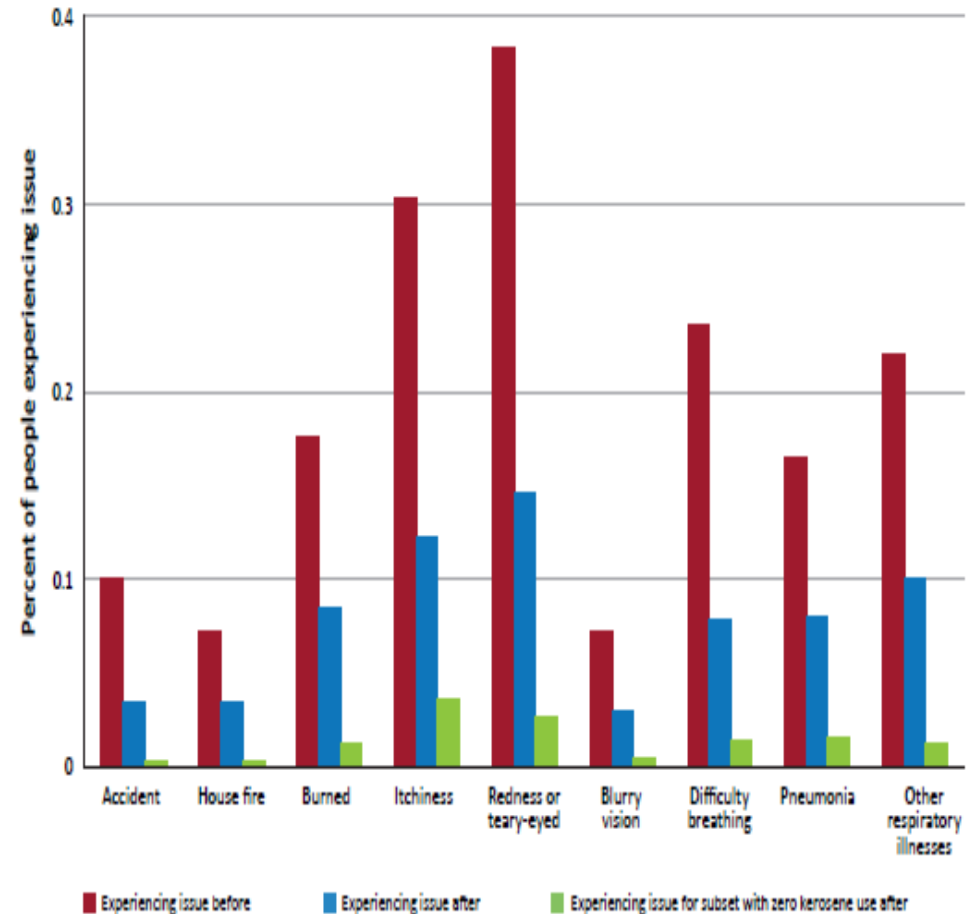


Policy Strategies & Considerations

There is a need for:

- More robust **national-level data on lighting fuel choices**
- More **lab-based research** on lighting technology characteristics.
- More rigorous **field-based epidemiological studies** investigating risks and benefits of alternatives.
- Improved **consumer education, standards, and supporting energy policies.**
- A **transition** to alternatives to fuel-based lighting, to reduce health and safety impacts.

Figure 3a. Health and safety indicators with and without kerosene lighting



en.lighten



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